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ABSTRACT BOOK

PP-253 [Pollination and Bee Flora]

Role of honeybee in pollination of canola

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The economic value of bees for pollination in different countries is estimated between 60 and 141 times the value of its direct production per year. Canola is a self-pollinating crop, but in the presence of pollinating insects, especially bees, its yield increases significantly. Agriculture in Iran is mostly retail owner and most farmers do not have enough botanical information about how to fertilize plants, which has led to low production of agricultural products per unit area. On the other hand, not paying attention to the role of bees in increasing agricultural products, including Canola, has caused the presence of bees in these fields is not welcomed. Therefore, according to the projects done and the effect of 20 to 30% of bees on increasing canola production, a promotional research project including treatment isolated by netting with bee pollination (T1) and treatment isolated by netting without pollination by bees (T2) on the yield and yield components of Canola cultivar Hayola 50, in the cropping year 2018-2019 at Gavdasht station of Mazandaran Province. The results showed that the controlled use of bees (T1) has a significant role in increasing grain yield. In this regard, the grain yield of the studied cultivar in T1 and T2 treatments was 3170, 2290 kg / ha, respectively. Thus, in the controlled pollination treatment, compared to the isolated conditions without bees, the grain yield increased by 28%. Estimation of grain yield components also indicates that controlled pollination treatment increased the number of pods per plant along with increasing the weight of 1000 seeds, which ultimately increased grain yield. Due to the fact that the number of seeds per pod is mostly due to genotype and mainly under genetic control, so this trait was not affected by different pollination treatments. In general, the results of this study emphasized that bee pollination has a prominent and significant role on Canola yield.

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Perennial energy crops as “environmental islands” in highly modified agricultural land – bioenergy plantations as a source of benefits for pollinating insects

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Declines in wild pollinator species in the last decades are well documented. They are driven primarily by habitat loss and a decrease in floral resources resulting from agricultural intensification. Large, monocultural crops, devoid of herbaceous plants don’t provide nectar and pollen throughout the all growing season. Negative ecosystem changes have sparked a debate on sustainable agriculture, the main assumption of which is to implement solutions that are beneficial both from an economic and environmental point of view. Landscape mosaicism increase is one of them. It can be achieved by incorporating extensively used plantations in industrial agriculture areas. Some of the most beneficial for this model are perennial energy plants. They can be grown on marginal land, of little use for other types of agricultural production, and also require a small amount of agrotechnical treatments. The most popular energy plants in Central Europe today include willow (Salix spp.), giant miscanthus (Miscanthus×giganteus), virginia fanpetals (Sida hermaphrodita) and cup plant (Silphium perfoliatum). Based on a literature review, they were assessed for suitability for pollinating insects. The following factors were taken into account: the use of pesticides and the number of agrotechnical treatments on the plantation, the presence of herbaceous plants, the usefulness of the plant itself as forage, and the potential for invasiveness. Conventional miscanthus plantations have been shown to be of little use for pollinating insects. The value of this plant, however, can be increased by intercropping with melilot (Melilotus officinalis). Flowering perennials – cup plant and virginia fanpetals were evaluated much better. However, they have a high invasive potential, which should be taken into account when introducing them into the environment. Additionally, they do not provide nectar in drought conditions. The greatest number of publications concerning willow, which was assessed positively as a source of forage. Additionally in the preliminary study, carried out in Leginy (north-eastern Poland) the cup plant and virginia mallow plantations have been observed during the flowering period. The abundant presence of bumblebees (Bombus spp.) and honey bee (Apis mellifera) have been indicated. Supplementary photographic documentation was prepared.

PP-256 [Pollination and Bee Flora]

The controversial importance of *Robinia pseudoacacia* L. for beekeeping in Northwestern Bulgaria

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Melliferous alien species are an integral part of the modern floral resources of Bulgaria, but their importance is a controversial and ambiguous topic for the beekeeping community. The public focus is mainly on the potential of ***Robinia pseudoacacia*** L. to generate high yields of bee products. Outside the immediate public interest, however, remains the important economic question of the long-term effect of the impact of alien species on the structural diversity of natural and cultivated melliferous vegetation in the relevant geographical conditions and the risk of losing species of value to this economic sector. Alien species have been identified as the second cause of species› extinction from natural biodiversity (Genovesi & Shine, 2004).
This study presents the results of successive field surveys (2018–2022) on the diversity of melliferous species in the habitat structure of Northwestern Bulgaria (Vratsa region), which confirm this potential danger. In areas of 95 ha occupied by ***Robinia pseudoacacia*** L. in the central parts of the municipality of Krivodol (representative for Northwestern Bulgaria), only 11 species of melliferous plants were found, with an area dominance of ***Robinia pseudoacacia*** L. of 95%. In habitats unaffected by alien species, the number of melliferous plants found in habitat E1.222 Moesio-Carpathian steppes is 64 species, and in habitat G1.7A1 Euro-Siberian steppe Quercus woods - 30 species. Within lowland areas (Danube Plain, northern Bulgaria), the process of aggressive self-propagation of alien species leads to periods of the year when pollinators (including honey bees) experience a shortage of nectar and pollen. This causes additional interventions by beekeepers, such as feeding during the active period of colonies and combating swarming (based on the author›s observations and discussions with other beekeepers).
Sustainable beekeeping depends on a steady flow of nectar and pollen from floral resources and a tailored spatial habitat structure to support pollinator movement during the active period. The results presented here aim to provide research data (part of a PhD thesis development) on habitats in Northwest Bulgaria to contribute to the discussion of long-term perspectives for the beekeeping community in Bulgaria on improving pollinator activity and establishing sustainable beekeeping practices.

PP-258 [Pollination and Bee Flora]

Chaos Project: a bee- friend viticulture: a case of study

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The honey bee is considered an excellent bioindicator as with its foraging activity it is able to sample a very large area. Pollen represents an excellent matrix for assessing the quality of an environment. On the contrary, bees not belonging to the genus Apis have a more limited flight activity and can therefore give us more point-like information. Therefore, the combination of the information provided by honey bees and other Apoidea can give us an indication of the sustainability of the activity implemented.

As part of the Chaos project, two apiaries were installed at the company, one was associated with a holistic apiary, for educational and recreational use; the other was functional for carrying out pollen sampling monthly. The pollen collected was analyzed both from a botanical point of view and from the point of view of the presence of residues. The Pollen Hazard Quotient was calculated for each pollen sample. Pan traps were monthly positioned for monitoring Apoidea in two transepts located in vineyards with a different grass management. Bee hotels were also installed in the vineyards.
The data obtained from the pollen analysis revealed how the sowing used for green manure was used by bees for the supply of pollen and nectar. The data obtained by residual analysis indicate that the PHQ for honey bees is medium-low. Apoidea non-Apis belonging to the family Alittidae and to the genera ***Andrena***, ***Antophora***, ***Bombus***, ***Ceratina***, ***Eucera***, ***Osmia***, ***Xylocopa*** were collected.